



Department of
Health



PRAMS Trend Report

2016-2020

Pregnancy Risk Assessment Monitoring System

Tennessee Department of Health



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Executive Summary

Monitoring and continuously improving the health of mothers and babies is fundamental to supporting the overall health of a population. When mothers have optimal health, their babies have a better chance of beginning life on a healthy note and setting a healthy trajectory for the remainder of their lives.

Historically, **Tennessee has consistently had higher rates of infant mortality, maternal mortality, low birthweight and premature births compared to the United States.** Different factors and experiences before, during, and after a woman's pregnancy influence these indicators, and understanding data trends can help shape policies and programs that improve maternal and infant outcomes.

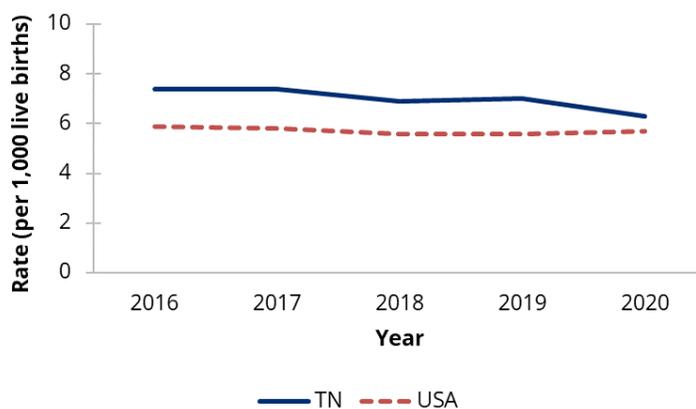
This report is based on the maternal and child health (MCH)¹ indicator reports published by the Centers for Disease Control and Prevention (CDC), which provide trends for select MCH indicators that have been prioritized at the state and national level. **While Tennessee has not seen significant change in many of the 2016-2020 indicators** presented in this report, the following are highlights. . .

What is Tennessee Doing Well?

From 2016 to 2020:

- Reported **postpartum smoking** *decreased* by about 23% among women in Tennessee from 2016 (17.7%) to 2020 (13.6%).
- On a year-by-year basis, more women in Tennessee tended to report using any **postpartum contraceptives** (80.7%) compared to the U.S. * (76.8%); further, fewer women in Tennessee tended to report using any of the least effective methods (21.4%) compared to the U.S. (23.4%).
- Reported **postpartum checkup** was similar (about 90%) between Tennessee and U.S. women.
- Tennessee women who tended to report that their babies were most often **laid to sleep on their backs** (79.3%) was similar compared to the U.S. average (79.4%). Implementing safe sleep practices reduces the risk of infant mortality. Since 2016, the infant mortality rate in Tennessee decreased slightly (Figure a).

Figure a: Infant Mortality Rate by Year



* Prevalence of Selected Maternal and Child Health Indicators for All PRAMS Sites, 2020 report not yet released; comparison year-by-year estimates for U.S. based on 2016-2019.

What Can Tennessee Improve?

From 2016 to 2020:

- Reported **multivitamin use 4+ times per week** by Tennessee women (36.8%) was generally lower compared to U.S. women (41.2%) on a year-year-basis.
- Only 40.6% of Tennessee women reported **exercising 3+ days per week** before pregnancy from 2016-2020; this may contribute to the higher prevalence of obesity reported in Tennessee women (between 29.5%) compared to the U.S. average (25.5%) during 2016-2019.
- **Cigarette smoking** in Tennessee women before pregnancy (21.8%) was more prevalent among compared to U.S. women (16.7%) during 2016-2019.
- More women in Tennessee (16.2%) tended to report experiencing **postpartum depressive symptoms** compared to U.S. women (13.0%).
- The percentage of Tennessee women who began **prenatal care during the 1st trimester** was generally lower (85.8%) compared to the U.S. average (87.0%)
- Fewer women in Tennessee reported an **intended pregnancy** (50.1%) compared to the U.S. (58.8%).
- Fewer Tennessee women tended to report **ever breastfeeding** (84.7%) compared to U.S. women (87.8%).

Many of these areas for improvement directly involve preconception health, something that is important not only for the general health of all women but also helps to set them up for a healthy pregnancy and delivery and reduces the chance of experiencing poor birth outcomes.² Additionally, unintended pregnancy can exacerbate the effects of inadequate preconception health, as it limits the ability of women to actively improve and address health and lifestyle problems that can increase the risk of poor pregnancy and birth outcomes.³ Finally, many of the preconception health and lifestyle factors mentioned above have been associated with an increased risk of postpartum depression and decreased likelihood of breastfeeding initiation.^{4,5}

Background: What is PRAMS?

The **Tennessee Pregnancy Risk Assessment Monitoring System (PRAMS)** is a state-run surveillance survey conducted in collaboration with the CDC that improves the understanding of the health and wellness of maternal and infant populations, to ultimately inform policies and programs to improve birth outcomes. State-specific, population-based information is collected by individual states on the attitudes, beliefs, and experiences of women before, during, and after pregnancy. Presently, 47 states and 4 independent regions/territories participate in PRAMS, representing nearly 81% of all U.S. births.

Data is collected and weighted in a manner that is representative of the entire Tennessee population of women who have given birth to a live infant during that year. Currently, Tennessee's PRAMS program surveys approximately 100 women per month (~1,200 per year) from Tennessee birth records. To be selected for participation, women must be residents of Tennessee that delivered a live-born infant within the previous 2-6 months. Currently, out of the total sampled population of Tennessee births, around 700 women participate in the survey each year; this is known as the **response rate**. The CDC sets a specific response rate threshold, currently 50%, that states must meet to be included in CDC's published national estimates and reports, such as the *Selected Maternal and Child Health Indicators* reports¹. Tennessee *did not* meet the threshold to be included in the United States estimates presented in those reports for most of the years (2016-2018) included in this trend report (2016-2020).

Because only a small number of women with live births are selected for participation in PRAMS, PRAMS should not be considered the primary data source for maternal and child health measures. The birth certificate, which captures information on every Tennessee-residing mother-infant pair, is a better primary source for some measures. That said, PRAMS is unique in that it is the only data source that captures information before, during, and after pregnancy, and it also captures qualitative data about these time periods. For example, the birth certificate captures a woman's insurance status at the time of delivery, while PRAMS captures insurance status before, during, and after pregnancy, as well as any barriers in addition to health care coverage that the woman may have experienced in seeking first-trimester prenatal care.

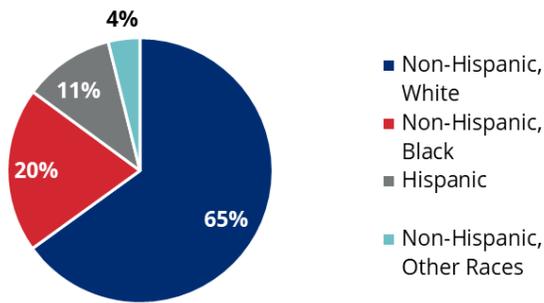
For more information on:

- **PRAMS methodology**, visit: <https://www.cdc.gov/prams/index.htm>
- **Tennessee Department of Health, Office of Vital Statistics**, visit: <https://www.tn.gov/health/health-program-areas/statistics/health-data/vital-statistics.html>
- **Healthy People 2030 Goals** for Maternal, Infant, and Child Health, visit: <https://health.gov/healthypeople>
- **TN Department of Health Title V Maternal & Child Health Block Grant**: <https://www.tn.gov/health/health-program-areas/fhw/mch-block-grant.html>

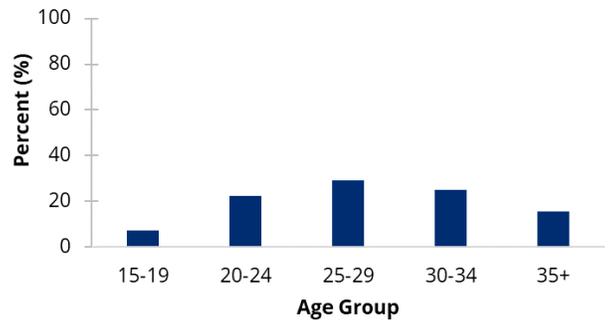
Demographics of Women with a Recent Live Birth in Tennessee ^{*†}

The demographics characteristics of PRAMS respondents don't change drastically from year-to-year; during 2016-2020, most women, on average, were: non-Hispanic White, married, aged 25-34 years, and have more than a high-school-level education.

Race/Ethnicity[#]



Age Group

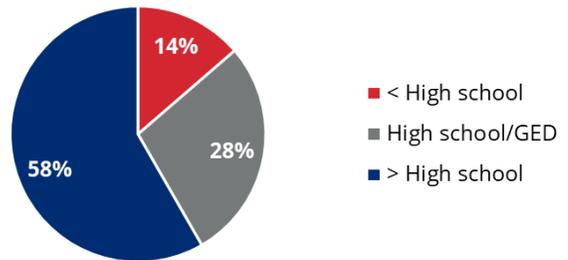


Marital Status

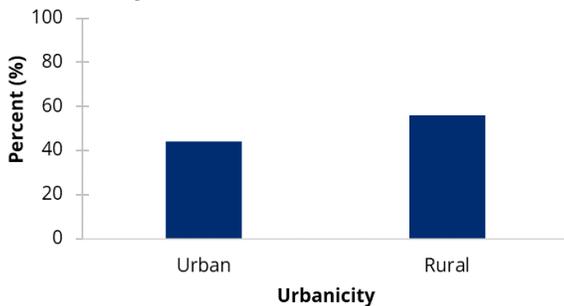
Over half of women (55.4%) were married.



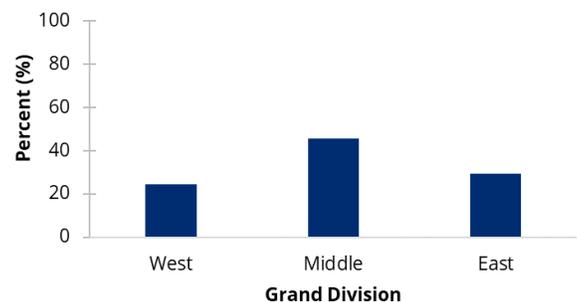
Education Level



Urbanicity



Grand Division



* PRAMS samples women with a recent live birth, and is weighted to be representative of that population, which will be referred to as "women" throughout this report.

†All presented estimates are based upon weighted PRAMS data.

#Race and ethnicity estimates shown here depict only respondents to the PRAMS survey.

Maternal Health Insurance Coverage

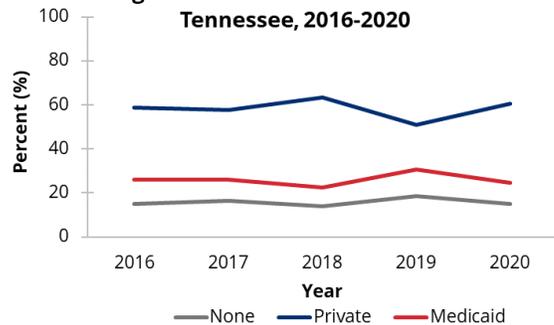
It is important for all women to receive medical care before, during, and after pregnancy to ensure a healthy pregnancy, birth and baby. To that end, health insurance is often essential to ensuring access to consistent medical care, whether it is employer based, self-purchased, or through Medicaid. Across the U.S., nearly half of infant deliveries are paid for through Medicaid.⁶ From 2016 to 2020:

Prior to pregnancy

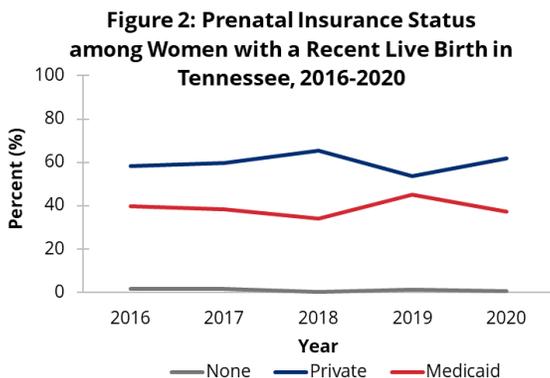
More women in Tennessee were covered by **private insurance (58.3%)** than were covered by **Medicaid (25.9%)** before pregnancy, and the percentage of both stayed relatively constant across years presented (figure 1).

Compared to U.S. rates, a lower percentage of Tennessee women have private insurance, and a higher percentage of Tennessee women have Medicaid; the percent **uninsured (15.8%, figure 1)** was nearly equal for both U.S. and Tennessee women.

Figure 1: Preconception Insurance Status among Women with a Recent Live Birth in Tennessee, 2016-2020



Source: TN PRAMS



Source: TN PRAMS

During pregnancy

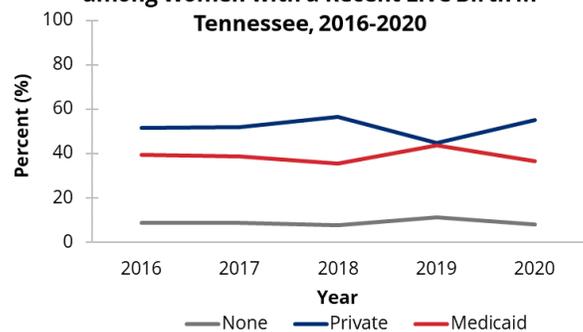
During pregnancy, fewer women (**1.3%**) remained **uninsured** compared to before pregnancy, while more women reported having insurance from **Medicaid (38.9%)** during pregnancy compared to before pregnancy (figure 2).

Low-income women may become eligible for Medicaid during pregnancy, thus the percentage of women covered by Medicaid increased while the percentage of uninsured women decreased.

After pregnancy

The percentage of women (**9%**) who were **uninsured** 2-6 months after pregnancy (figure 3) was less than the U.S. average. The percentage of women lacking postpartum insurance has not changed significantly since 2016 and is similar to the U.S. percentage.

Figure 3: Postpartum Insurance Status among Women with a Recent Live Birth in Tennessee, 2016-2020



Source: TN PRAMS

Pregnancy Intention & Family Planning

Family planning helps improve the overall health and wellbeing of whole families, individual women, and infants alike.⁷ Adequate time spacing between births and the prevention of pregnancies helps families reduce the number of **unintended pregnancies**—defined as being either *unwanted* or *mistimed* pregnancies (which account for approximately 45% of U.S. pregnancies each year) and can result in various negative financial and health outcomes for women and infants.⁷ Women who have less access to family planning services include those belonging to an ethnic/racial minority group (Non-Hispanic Black or Hispanic), having less education or income, or being uninsured. Women with less access to health care are more likely to have unintentional pregnancies.⁷

Pregnancy Intention[†]

During 2016-2020, the percentage of **unintended pregnancies** ranged from **47.2%** to **51.5%**. Intended pregnancies have generally been stable from year-to-year, accounting for an average of **50.1%** of live births in Tennessee.

Family Planning[‡]

The proportion of women who used any contraception before or after pregnancy remained largely the same between 2016 and 2020. Overall, around **40.2%** of **women used any contraceptives** before pregnancy; among those with **unintended** pregnancies, **56.2%** were **not using any method** prior to pregnancy.

Overall, around **80.7%** of all women used any **postpartum contraceptives**; among those with **unintended** pregnancies, **18.3%** were **not using any method** after pregnancy.

By effectiveness, about **1.3%** of all women reported using **most-effective contraception** methods prior to pregnancy (figure 4.a); this shifts after pregnancy, with **30.5%** of all women having reported using **most-effective methods** (figure 4.b).

Figure 4.a: Average Preconception Contraceptive Use by Effectiveness among Women with a Recent Live Birth in Tennessee (2016-2020)

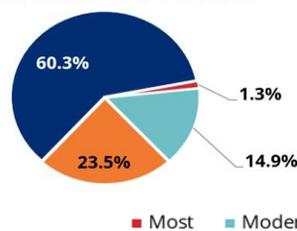
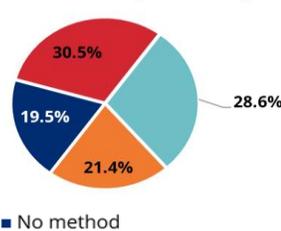


Figure 4.b: Average Postpartum Contraceptive Use by Effectiveness among Women with a Recent Live Birth in Tennessee (2016-2020)



Source: TN PRAMS

■ Most ■ Moderately ■ Least ■ No method

[†] Pregnancy intention and [‡]contraceptive effectiveness are defined in the Analysis Notes.

Maternal Health Care Services

Women who are healthy before and at the time of conception typically have healthier pregnancies with fewer complications and improved outcomes; optimal health status at this time has also been found to potentially reduce financial costs during the prenatal and postpartum periods.^{8,9} A woman's pre-pregnancy health status includes her weight, physical activity, use of vitamins (especially folic acid), and even her oral health.^{2,10} These health status indicators are assessed and monitored during health care visits before, during, and after pregnancy.

Health care before & after pregnancy is just as important as it is during pregnancy.

Preconception Healthcare Visit

Overall, nearly **66.8%** of women reported **attending any type of preconception healthcare visit** during the 12 months before pregnancy. Since 2016, the proportion of women reporting a preconception healthcare visit has decreased slightly (figure 5).

Figure 5: Preconception Health Visit & Dental Cleaning among Women with a Recent Live Birth in Tennessee (2016-2020)



Source: TN PRAMS; CDC MCH Indicator Report (2016-2019)

Prenatal Care

About **85.8%** of women reported **beginning prenatal care during their 1st trimester**; **13.6%** reported starting during the 2nd or 3rd trimester, and only **0.6%** reported not receiving any prenatal care.

Postpartum Checkup

Nearly **89.8%** of women reported **attending their postpartum checkup**.

Flu Vaccinations & Dental Care

Before or during their pregnancy, an average of **56.7% of women reported receiving a flu shot** prior to delivering their baby. About **37.6% of women reported having their teeth cleaned** during pregnancy; this estimate has decreased slightly since 2016 (figure 5). In addition to being linked to heart disease in the general population¹¹, due to hormonal changes during pregnancy, poor dental health has been linked to adverse pregnancy outcomes¹² such as preterm birth, pre-eclampsia/eclampsia, and even an increased risk of dental cavities in early childhood among infants born to mothers with poor dental health.

Maternal Nutrition & Wellness

Women that are under or overweight before pregnancy are more likely to have low- or high birthweight babies, and experience problems during pregnancy such as gestational diabetes, preeclampsia, or even miscarriages. Their babies are also at increased risk for birth defects, and impaired growth, as well as childhood obesity and asthma.^{13,14} For women that are overweight, weight loss through proper dieting before pregnancy can help improve their overall health and prepare for a healthy pregnancy.¹⁴ Additional information on birth defects in Tennessee can be found in the **Tennessee Birth Defects Data Report**.¹⁵

Weight Class Status

On average, over 1 in 2 women with a recent live birth in Tennessee were overweight or obese prior to pregnancy; **25.1% were overweight** and **29.5% were obese**. Forty-one percent were of normal weight; weight status has not changed significantly since 2016 (figure 6).

Diet & Exercise

About **28.2% of Tennessee women reported dieting to lose weight** during the 12 months before pregnancy. An average of **40.6%** of Tennessee women reported **exercising 3 or more days per week** during the 12 months before pregnancy.

Multivitamin Use

Another facet of maternal wellness is taking **multivitamins**, which not only ensure adequate nutrition before and during pregnancy, but provide folic acid, an important nutrient that prevents neural tube defects (defects of the brain and spinal cord) in infants.¹⁶ It is recommended to take folic acid even before pregnancy begins, as the neural tube forms before many women even know they are pregnant.¹⁰

About **32.1%** of Tennessee women reported taking **multivitamins every day of the week** during the month before pregnancy, while 57.1% of women reported not taking any multivitamins at all (figure 7). Daily use of multivitamin use has not changed significantly since 2016.

Figure 6: Weight Class Status among Women with a Recent Live Birth (2016-2020)

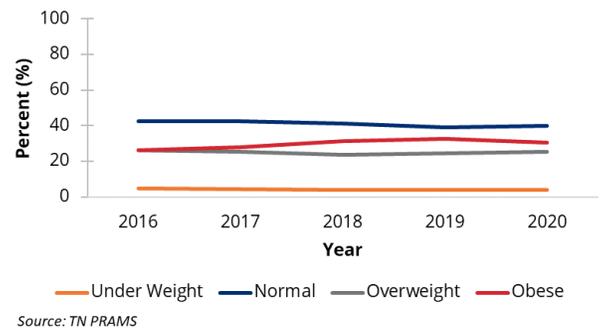
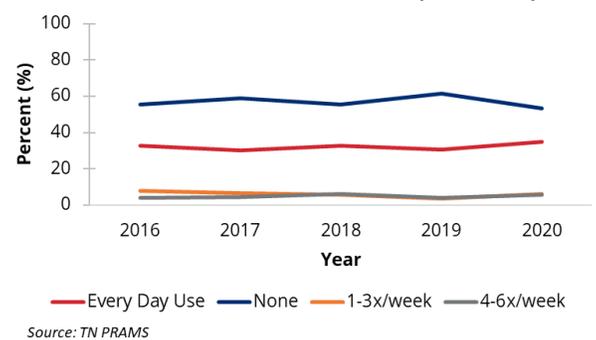


Figure 7: Daily Multivitamin Use among Women with a Recent Live Birth (2016-2020)



Maternal Substance Use

Smoking and E-Cigarette Use

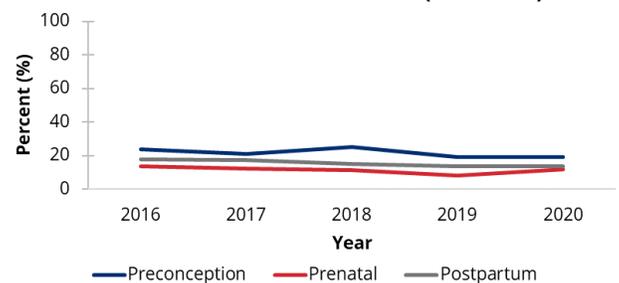
Smoking cigarettes or electronic cigarettes (e-cigarettes) during pregnancy can lead to fetal death or birth defects.¹⁷ The Tennessee Department of Health estimates that approximately \$20 million in excess health care costs during pregnancy and the first year after birth can be attributed to prenatal smoking.

Smoking data from PRAMS tends to be higher compared to data from birth certificates due to a variety of factors affecting self-reporting, but research has suggested numbers from both sources may be underestimating the true percentage of smokers.¹⁸

During 2016-2020, the proportion of Tennessee women who **smoked cigarettes within the 3 months before pregnancy** averaged around **21.8%**. During the last 3 months of pregnancy, about **11.6%** of all women reported **smoking** (figure 8).

Prevalence of **postpartum smoking** was about **15.6%** of all women between 2016 - 2020; since 2016, postpartum smoking has decreased slightly. Prevalence of e-cigarette use tends to be much lower compared to cigarette smoking; see *Appendix A* for estimates.

Figure 8: Cigarette Smoking among Women with a Recent Live Birth in Tennessee (2016-2020)



Source: TN PRAMS

Alcohol Use

There is *no safe level of alcohol consumption* during pregnancy; alcohol use during this time can affect the brain of an unborn baby. This can ultimately restrict the baby's mental and physical development and result in a condition known as **fetal alcohol spectrum disorder (FASD)**—or it can lead to miscarriage or stillbirth.¹⁹

Nearly **52.6%** of Tennessee women **used alcohol** during the **3 months before pregnancy**. About **6.7%** of Tennessee women used alcohol **during pregnancy**.

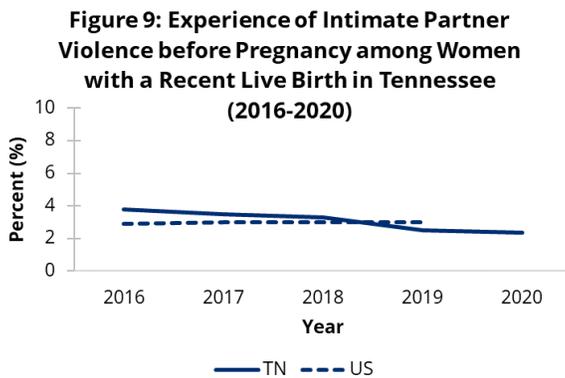
Intimate Partner Violence & Maternal Depression

Intimate Partner Violence

Experiencing **Intimate partner violence (IPV)** during pregnancy leaves women with an increased risk of poor pregnancy outcomes for both herself and her baby.²⁰ These risks are brought about not only by the physical violence, but also by stress from the lasting psychological effects.²⁰ About

Historically, more Tennessee women appear to have experienced IPV compared to the U.S. average.

3.2% of Tennessee women reported experiencing any **IPV before pregnancy** by a current or ex-partner (figure 9).



Source: TN PRAMS; CDC MCH Indicator Report (2016-2019)

During pregnancy, **2%** of women in Tennessee reported experiencing **IPV**. The proportion of IPV among Tennessee women has decreased slightly since 2016.

Postpartum Depressive Symptoms

Postpartum depression (PPD)—depression that occurs at any time during the postpartum period is another complication women can face after giving birth.²¹ Pre-pregnancy depression, family history of mental illness or substance use disorder, as well as young maternal age are thought to be some of the risk factors for PPD.²² PPD has been shown to have lasting effects on both mother and infant.²³ Women can experience low self-esteem, increased anxiety and illness, as well as lowered quality of life and home environment.²³ Infants can experience lowered overall health, gain less weight, and have reduced cognitive and motor-skill development.²³

About **17.1%** of women reported **experiencing depression prior to pregnancy**. An average of **16.2%** of Tennessee women reported **experiencing symptoms of postpartum depression (PPDS)** between 2016 and 2020. From year-to-year in Tennessee, women reporting depression or depressive symptoms around the time of pregnancy has remained mostly constant.

Infant Sleep Practices and Breastfeeding

Sudden Unexpected Infant Death (SUID)—the sudden and unexpected death of an infant under 12 months of age, the cause of which is not understood before investigation—is the leading cause of death among infants aged 1-12 months, and the fourth leading cause among all infants in the U.S.²⁴ Research indicates that increased duration of exclusive breastfeeding is associated with a decreased risk of SUID.²⁵

While other factors such as substance use during or after pregnancy and low birth weight may play a role in SUID, when an infant is specifically found unresponsive in a sleep environment without another cause of death, it is referred to as infant sleep-related death²⁶. Most of these cases are linked to improper sleep position or environment, such as the infant having unsafe bedding or toys in the sleeping area, not sleeping in a crib or bassinet, sleeping with other people, and not sleeping on their back. For more information on infant sleep-related death, see the *2022 Child Fatality Annual Report*²⁶.

Safe Sleep

An average of **79.3%** of Tennessee women reported that they most often **place their baby on his or her back to sleep** (figure 10); **76%** of women reported her baby most often **slept alone**, and **35.62%** reported her baby **sleeps on an approved sleep surface**.

Figure 10: Infant Sleep Practices among Women with a Recent Live Birth in Tennessee (2016-2020)

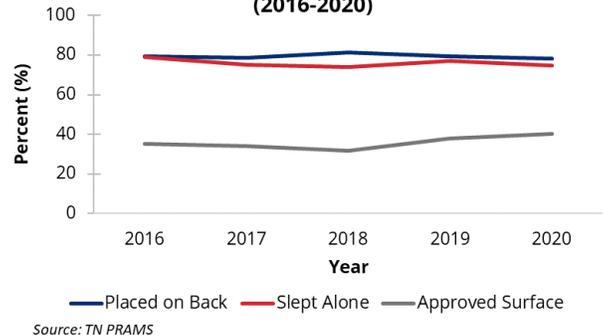
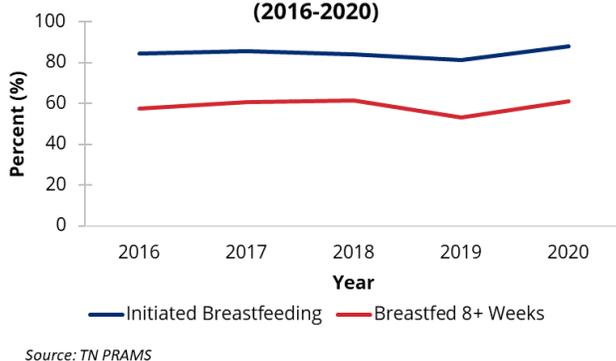


Figure 11: Breastfeeding Practices among Women with a Recent Live Birth in Tennessee (2016-2020)



Breastfeeding

Nearly **84.7%** women reported **ever breastfeeding their babies** (figure 11). While these rates have not changed significantly since 2016, they have exceeded the Healthy People 2020 goal of 81.9%.

At the time of survey, **58.9%** of women reported they had breastfed their baby for 8 or more weeks. While the American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for at least 6 months²⁷, there are

benefits to shorter durations—particularly among those women who struggle to breastfeed—such as enhanced opportunities for bonding and reduced feelings of inadequacy or depression.^{28,29}

Appendix A: Indicator Trends

			Year									
			2016		2017		2018		2019		2020	
Topic	Indicator	Response	%	[95%CL]	%	[95%CL]	%	[95%CL]	%	[95%CL]	%	[95%CL]
Maternal Health Insurance Coverage	Insurance Status Before Pregnancy	Medicaid	26.2	22.0-30.4	26.0	22.1-29.8	22.5	18.8-26.3	30.6	25.3-35.9	24.5	19.8-29.2
		None	15.1	11.6-18.6	16.3	13.1-19.4	14.0	11.1-16.9	18.6	14.2-22.9	14.8	11.0-18.7
		Private	58.7	54.0-63.3	57.7	53.5-62.0	63.5	59.2-67.7	50.9	45.2-56.5	60.7	55.3-66.0
	Insurance Status During Pregnancy	Medicaid	39.8	34.9-44.8	38.4	33.7-43.1	34.1	29.5-38.7	45.0	39.0-51.1	37.5	31.6-43.4
		None	1.8	0.2-3.4	1.9	0.5-3.3	0.3	0.0-0.7	1.4	0.0-2.9	0.6	0.0-1.4
		Private	58.4	53.4-63.4	59.7	55.0-64.4	65.6	61.0-70.2	53.6	47.5-59.6	61.9	56.0-67.8
	Insurance Status After Pregnancy	Medicaid	39.4	34.9-43.9	38.8	34.6-43.0	35.6	31.3-39.8	43.7	38.2-49.3	36.8	31.5-42.2
		None	9.0	6.2-11.7	9.0	6.7-11.2	7.8	5.4-10.1	11.4	7.9-14.9	8.0	5.0-11.1
		Private	51.6	47.0-56.3	52.2	47.9-56.4	56.7	52.3-61.1	44.9	39.4-50.4	55.1	49.6-60.6
Pregnancy Intention & Family Planning	Mistimed pregnancy	No	75.3	71.3-79.2	77.4	73.9-80.9	78.3	74.8-81.9	79.0	74.3-83.6	77.3	72.8-81.7
		Yes	24.7	20.8-28.7	22.6	19.1-26.1	21.7	18.1-25.2	21.0	16.4-25.7	22.7	18.3-27.2
	Unwanted pregnancy	No	91.7	89.4-94.0	90.2	87.5-92.8	93.0	90.9-95.1	89.9	86.6-93.3	87.6	83.9-91.3
		Yes	8.3	6.0-10.6	9.8	7.2-12.5	7.0	4.9-9.1	10.1	6.7-13.4	12.4	8.7-16.1
	Felt Unsure about	No	82.4	79.1-85.8	80.9	77.5-84.3	81.4	77.9-85.0	81.2	76.8-85.5	85.6	81.9-89.3
		Yes	17.6	14.2-20.9	19.1	15.7-22.5	18.6	15.0-22.1	18.8	14.5-23.2	14.4	10.7-18.1
	Intended pregnancy	No	50.6	46.0-55.2	51.5	47.3-55.7	47.2	42.9-51.6	49.9	44.5-55.4	49.5	44.2-54.8
		Yes	49.4	44.8-54.0	48.5	44.3-52.7	52.8	48.4-57.1	50.1	44.6-55.5	50.5	45.2-55.8
	Any Contraceptive Use Before Pregnancy	No	58.5	52.5-64.5	58.5	52.8-64.2	59.3	53.4-65.2	66.6	59.4-73.8	57.2	49.9-64.6
		Yes	41.5	35.5-47.5	41.5	35.8-47.2	40.7	34.8-46.6	33.4	26.2-40.6	42.8	35.4-50.1
Any Contraceptive Use Before Pregnancy (among Women with Unintended	No	52.6	46.0-59.2	55.1	48.9-61.4	57.0	50.6-63.5	63.5	55.5-71.5	53.7	45.6-61.9	

			Year									
			2016		2017		2018		2019		2020	
Topic	Indicator	Response	%	[95%CL]								
		Yes	47.4	40.8-54.0	44.9	38.6-51.1	43.0	36.5-49.4	36.5	28.5-44.5	46.3	38.1-54.4
	Any Contraceptive Use After Pregnancy	No	18.0	14.5-21.5	19.3	15.9-22.8	22.4	18.6-26.1	16.9	12.8-21.0	19.7	15.5-23.9
		Yes	82.0	78.5-85.5	80.7	77.2-84.1	77.6	73.9-81.4	83.1	79.0-87.2	80.3	76.1-84.5
	Any Contraceptive Use After Pregnancy (among Women with Unintended	No	18.2	13.3-23.1	17.9	13.1-22.7	23.2	17.6-28.7	15.3	9.5-21.0	16.9	11.3-22.6
		Yes	81.8	76.9-86.7	82.1	77.3-86.9	76.8	71.3-82.4	84.7	79.0-90.5	83.1	77.4-88.7
	Contraceptive Use by Effectiveness Before Pregnancy	Least	23.7	18.6-28.8	23.8	19.0-28.7	25.5	20.2-30.7	18.9	13.0-24.7	25.6	19.0-32.2
		Moderately	15.7	11.2-20.2	16.0	11.7-20.3	13.6	9.6-17.7	13.2	8.0-18.5	15.2	9.8-20.5
		Most	1.4	0.1-2.8	1.2	0.1-2.2	1.1	0.0-2.3	1.3	0.0-2.8	1.6	0.0-3.5
		No method	59.2	53.2-65.2	59.0	53.3-64.7	59.8	53.8-65.7	66.6	59.4-73.8	57.6	50.2-65.0
	Contraceptive Use by Effectiveness After Pregnancy	Least	19.0	15.5-22.4	22.5	18.9-26.1	20.4	17.0-23.9	27.7	22.7-32.7	16.8	12.8-20.8
		Moderately	31.5	27.2-35.8	29.5	25.7-33.4	26.4	22.5-30.2	26.0	21.1-30.8	28.9	24.0-33.8
		Most	31.3	27.0-35.5	28.5	24.7-32.3	30.5	26.4-34.5	29.3	24.4-34.2	34.3	29.2-39.4
		No method	18.3	14.7-21.8	19.5	16.1-23.0	22.7	18.9-26.5	17.1	12.9-21.2	20.0	15.8-24.2
Maternal Health Care Services	Preconception Visit	No	28.0	23.8-32.2	33.0	29.1-37.0	32.7	28.6-36.8	37.2	31.9-42.5	36.4	31.2-41.6
		Yes	72.0	67.8-76.2	67.0	63.0-70.9	67.3	63.2-71.4	62.8	57.5-68.1	63.6	58.4-68.8
	Started Prenatal Care 1st Trimester	1 st trim.	84.7	81.3-88.1	87.8	85.0-90.7	86.1	83.0-89.3	84.7	80.6-88.7	84.6	80.7-88.5
		2nd/3rd trim.	14.6	11.2-17.9	11.9	9.0-14.7	13.3	10.1-16.4	14.9	10.9-19.0	14.4	10.6-18.2
		No PNC	0.8	0.0-1.5	0.3	0.0-0.7	0.6	0.0-1.2	0.4	0.0-1.0	1.0	0.0-2.1
	Had Postpartum Check-up	No	11.1	8.1-14.1	7.3	5.0-9.7	10.7	7.9-13.6	11.7	8.2-15.2	11.3	7.9-14.7
		Yes	88.9	85.9-91.9	92.7	90.3-95.0	89.3	86.4-92.1	88.3	84.8-91.8	88.7	85.3-92.1

			Year									
			2016		2017		2018		2019		2020	
Topic	Indicator	Response	%	[95%CL]								
	Flu Shot before Delivery	No	41.4	36.9-45.9	44.1	39.9-48.3	42.7	38.4-47.1	43.2	37.8-48.7	45.3	39.9-50.6
		Yes	58.6	54.1-63.1	55.9	51.7-60.1	57.3	52.9-61.6	56.8	51.3-62.2	54.7	49.4-60.1
	Flu Shot Before or During Pregnancy	No Shot	41.4	36.9-45.9	44.1	39.9-48.3	42.7	38.4-47.1	43.2	37.8-48.7	45.3	39.9-50.6
		Yes, before	12.2	9.3-15.1	12.7	10.1-15.3	10.3	7.9-12.8	11.7	8.3-15.2	12.6	9.0-16.2
		Yes, during	46.4	41.8-51.0	43.2	39.0-47.4	46.9	42.6-51.3	45.0	39.6-50.5	42.1	36.8-47.4
	Dental Cleaning During Pregnancy	No	59.3	54.8-63.7	61.1	57.0-65.2	58.6	54.3-62.8	68.6	63.7-73.6	66.1	61.1-71.1
		Yes	40.7	36.3-45.2	38.9	34.8-43.0	41.4	37.2-45.7	31.4	26.4-36.3	33.9	28.9-38.9
Maternal Nutrition & Wellness	Dieting to Lose Weight Before Pregnancy	No	70.3	66.1-74.5	72.0	68.2-75.8	69.9	65.8-74.0	72.3	67.4-77.1	74.8	70.2-79.3
		Yes	29.7	25.5-33.9	28.0	24.2-31.8	30.1	26.0-34.2	27.7	22.9-32.6	25.2	20.7-29.8
	Exercise 3+ Days Per Week Before Pregnancy	No	57.9	53.5-62.4	58.5	54.4-62.7	58.8	54.5-63.1	61.0	55.7-66.2	61.5	56.4-66.7
		Yes	42.1	37.6-46.5	41.5	37.3-45.6	41.2	36.9-45.5	39.0	33.8-44.3	38.5	33.3-43.6
	Weight Class Status	Normal	42.5	37.9-47.1	42.4	38.1-46.7	41.2	36.8-45.5	39.2	33.8-44.6	39.9	34.5-45.2
		Obese	26.4	22.4-30.3	28.0	24.2-31.9	31.2	27.1-35.2	32.5	27.3-37.7	30.4	25.4-35.5
		Overweight	26.4	22.2-30.6	25.2	21.3-29.0	23.8	20.0-27.6	24.5	19.8-29.2	25.6	20.8-30.4
		Underweight	4.7	2.5-6.9	4.4	2.8-6.1	3.8	2.2-5.5	3.8	1.8-5.7	4.1	2.0-6.3
	Any Multivitamin Use Before Pregnancy	No	63.1	58.6-67.5	65.3	61.4-69.2	61.3	57.1-65.6	65.3	60.2-70.4	59.7	54.5-64.9
		Yes	36.9	32.5-41.4	34.7	30.8-38.6	38.7	34.4-42.9	34.7	29.6-39.8	40.3	35.1-45.5
	Frequency of Multivitamin Use Before Pregnancy	1-3/wk	7.7	5.1-10.3	6.4	4.4-8.5	5.9	3.7-8.0	3.8	1.8-5.8	6.2	3.6-8.8
		4-6/wk	3.9	2.2-5.7	4.5	2.7-6.3	6.1	4.1-8.0	3.8	1.8-5.9	5.6	3.2-8.1
		Every day	33.0	28.7-37.3	30.2	26.4-33.9	32.6	28.5-36.7	30.8	25.9-35.8	34.7	29.7-39.8
		None	55.4	50.8-60.0	58.8	54.7-62.9	55.5	51.1-59.8	61.5	56.3-66.7	53.5	48.1-58.8

			Year									
			2016		2017		2018		2019		2020	
Topic	Indicator	Response	%	[95%CL]								
Maternal Substance Use	Any Smoking Before Pregnancy	No	76.2	72.3-80.1	78.9	75.4-82.4	75.0	71.3-78.7	80.7	76.4-84.9	80.8	76.6-85.0
		Yes	23.8	19.9-27.7	21.1	17.6-24.6	25.0	21.3-28.7	19.3	15.1-23.6	19.2	15.0-23.4
	Any Smoking During Pregnancy	No	86.4	83.3-89.4	87.9	85.1-90.7	88.5	85.9-91.2	91.7	89.0-94.5	88.0	84.6-91.4
		Yes	13.6	10.6-16.7	12.1	9.3-14.9	11.5	8.8-14.1	8.3	5.5-11.0	12.0	8.6-15.4
	Any Smoking After Pregnancy	No	82.3	78.8-85.7	82.8	79.6-86.1	85.0	82.0-88.1	86.4	82.8-90.0	86.4	82.8-90.0
		Yes	17.7	14.3-21.2	17.2	13.9-20.4	15.0	11.9-18.0	13.6	10.0-17.2	13.6	10.0-17.2
	Any Hookah Use	No	95.1	93.0-97.2	93.5	91.1-95.8	95.8	93.8-97.8	96.1	93.9-98.4	96.7	94.8-98.7
		Yes	4.9	2.8-7.0	6.5	4.2-8.9	4.2	2.2-6.2	3.9	1.6-6.1	3.3	1.3-5.2
	Any E-Cigarette Use Before Pregnancy	No	93.0	90.7-95.3	93.9	91.8-96.1	95.4	93.5-97.3	94.9	92.3-97.4	92.7	89.9-95.5
		Yes	7.0	4.7-9.3	6.1	3.9-8.2	4.6	2.7-6.5	5.1	2.6-7.7	7.3	4.5-10.1
	Any E-Cigarette Use During Pregnancy	No	97.9	96.6-99.2	98.0	96.6-99.4	98.2	97.0-99.5	99.0	98.2-99.8	97.9	96.3-99.4
		Yes	2.1	0.8-3.4	2.0	0.6-3.4	1.8	0.5-3.0	1.0	0.2-1.8	2.1	0.6-3.7
	Any Alcohol Use Before Pregnancy	No	46.9	42.4-51.5	47.7	43.4-51.9	48.8	44.4-53.2	50.4	45.0-55.9	42.6	37.4-47.9
		Yes	53.1	48.5-57.6	52.3	48.1-56.6	51.2	46.8-55.6	49.6	44.1-55.0	57.4	52.1-62.6
	Any Alcohol Use During Pregnancy	No	93.2	91.0-95.4	91.2	88.7-93.7	94.7	92.9-96.6	95.2	93.0-97.4	93.2	90.5-95.9
		Yes	6.8	4.6-9.0	8.8	6.3-11.3	5.3	3.4-7.1	4.8	2.6-7.0	6.8	4.1-9.5
Intimate Partner Violence & Maternal Depression	Any Intimate Partner Violence Before Pregnancy	No	96.2	94.6-97.9	96.5	94.9-98.1	96.7	95.3-98.1	97.5	95.9-99.0	97.6	96.2-99.1
		Yes	3.8	2.1-5.4	3.5	1.9-5.1	3.3	1.9-4.7	2.5	1.0-4.1	2.4	0.9-3.8

			Year									
			2016		2017		2018		2019		2020	
Topic	Indicator	Response	%	[95%CL]								
Any Intimate Partner Violence (Current Partner) Before Pregnancy		No	97.8	96.6-99.1	97.5	96.0-98.9	98.3	97.3-99.3	98.8	97.8-99.8	98.2	96.9-99.5
		Yes	2.2	0.9-3.4	2.5	1.1-4.0	1.7	0.7-2.7	1.2	0.2-2.2	1.8	0.5-3.1
Any Intimate Partner Violence (Ex-Partner) Before Pregnancy		No	97.6	96.3-98.8	97.6	96.3-99.0	98.1	97.0-99.2	98.2	96.9-99.5	99.1	98.2-99.9
		Yes	2.4	1.2-3.7	2.4	1.0-3.7	1.9	0.8-3.0	1.8	0.5-3.1	0.9	0.1-1.8
Any Intimate Partner Violence During		No	97.2	95.9-98.6	98.1	97.0-99.2	98.0	96.9-99.2	99.4	98.8-100	97.4	95.7-99.0
		Yes	2.8	1.4-4.1	1.9	0.8-3.0	2.0	0.8-3.1	0.6	0.0-1.2	2.6	1.0-4.3
Any Intimate Partner Violence (Current Partner) During Pregnancy		No	98.2	97.1-99.4	98.9	98.1-99.7	98.7	97.8-99.6	99.8	99.7-100	97.8	96.3-99.4
		Yes	1.8	0.6-2.9	1.1	0.3-1.9	1.3	0.4-2.2	0.2	0.0-0.3	2.2	0.6-3.7
Any Intimate Partner Violence (Ex-Partner) During Pregnancy		No	98.8	97.9-99.6	98.4	97.4-99.4	99.2	98.4-100	99.5	98.9-100	98.8	97.6-100
		Yes	1.2	0.4-2.1	1.6	0.6-2.6	0.8	0.0-1.6	0.5	0.0-1.1	1.2	0.0-2.4
Reported Depression Before Pregnancy		No	84.5	81.1-87.9	84.6	81.5-87.6	79.4	75.8-83.0	82.7	78.7-86.7	82.6	78.6-86.6
		Yes	15.5	12.1-18.9	15.4	12.4-18.5	20.6	17.0-24.2	17.3	13.3-21.3	17.4	13.4-21.4
Reported Depression During Pregnancy		No	81.2	77.6-84.9	86.1	83.2-88.9	83.7	80.5-87.0	83.2	79.1-87.2	84.0	80.1-87.9
		Yes	18.8	15.1-22.4	13.9	11.1-16.8	16.3	13.0-19.5	16.8	12.8-20.9	16.0	12.1-19.9
Reported Postpartum Depressive Symptoms		No	81.1	77.6-84.7	84.0	80.9-87.2	84.3	81.1-87.5	84.9	81.0-88.9	85.1	81.4-88.9
		Yes	18.9	15.3-22.4	16.0	12.8-19.1	15.7	12.5-18.9	15.1	11.1-19.0	14.9	11.1-18.6

			Year									
			2016		2017		2018		2019		2020	
Topic	Indicator	Response	%	[95%CL]								
Infant Sleep Practices & Breastfeeding	Baby Most often Placed to Sleep on Back	No	20.7	16.9-24.4	21.5	17.9-25.1	18.7	15.3-22.2	20.6	16.2-25.1	21.6	17.2-25.9
		Yes	79.3	75.6-83.1	78.5	74.9-82.1	81.3	77.8-84.7	79.4	74.9-83.8	78.4	74.1-82.8
	Baby Most often Slept Alone	No	20.9	17.1-24.6	25.0	21.2-28.7	25.8	21.8-29.8	23.1	18.4-27.7	25.1	20.4-29.8
		Yes	79.1	75.4-82.9	75.0	71.3-78.8	74.2	70.2-78.2	76.9	72.3-81.6	74.9	70.2-79.6
	Baby Laid to Sleep on an Approved Sleep Surface	No	64.6	60.1-69.1	65.8	61.8-69.9	68.3	64.3-72.4	62.1	56.7-67.5	59.9	54.5-65.2
		Yes	35.4	30.9-39.9	34.2	30.1-38.2	31.7	27.6-35.7	37.9	32.5-43.3	40.1	34.8-45.5
	Baby Ever Breastfed	No	15.7	12.3-19.1	14.3	11.1-17.4	15.9	12.6-19.2	18.7	14.3-23.1	12.1	8.5-15.6
		Yes	84.3	80.9-87.7	85.7	82.6-88.9	84.1	80.8-87.4	81.3	76.9-85.7	87.9	84.4-91.5
	Breastfeeding Duration	8+ weeks	57.4	52.8-61.9	60.7	56.5-65.0	61.3	57.0-65.6	53.3	47.8-58.8	61.0	55.7-66.3
		<8 weeks	42.6	38.1-47.2	39.3	35.0-43.5	38.7	34.4-43.0	46.7	41.2-52.2	39.0	33.7-44.3

Appendix B: Data Analysis Notes

SAS 9.4 (Cary, NC) was used for all analyses; appropriate survey procedures were used to account for the nature of complex survey data.

1. PRAMS site aggregate for 2016: Alaska, Arkansas, Colorado, Connecticut, Delaware, Hawaii, Illinois, Iowa, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New Mexico, New York City, New York State, Oklahoma, Pennsylvania, Rhode Island, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming met the required 55% response rate threshold for inclusion.
2. PRAMS site aggregate for 2017: Alabama, Alaska, Colorado, Connecticut, Delaware, Georgia, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Jersey, New Mexico, New York City, New York State, North Carolina, North Dakota, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming met the required 55% response rate threshold for inclusion.
3. PRAMS site aggregate for 2018: Alabama, Alaska, Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York City, New York State, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Puerto Rico, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming met the required 50% response rate threshold for inclusion.
4. PRAMS site aggregate for 2019: Alabama, Alaska, Arkansas, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaii, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York City, New York State, North Carolina, North Dakota, Oregon, Pennsylvania, Puerto Rico, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming met the required 50% response rate threshold for inclusion.
5. Substance use estimates include *all women with a recent live birth* as the denominator.
6. *Intimate Partner Violence*: Defined as being pushed, hit, slapped, kicked, choked, or physically hurt in any way by a husband/partner and/or an ex-husband/ex-partner. Beginning in 2016 (Phase 8), the question response options were expanded to include “my ex-husband or ex-partner” in addition to “my husband or partner”. PRAMS data has been calculated to reflect this change.
7. *Pregnancy intention*: Defined as the woman’s reported feelings about becoming pregnant just before she became pregnant. Intention was assessed 2-6 months postpartum. **Mistimed** pregnancies are those that were wanted, but later. **Unwanted** pregnancies are those not wanted then or any time in the future. **Intended** pregnancies were those that were wanted then or sooner. **Unsure** describes those women who were unsure about their desire for pregnancy.

8. *Postpartum contraceptive use*: Defined as using any kind of birth control at the time when the PRAMS survey was completed. Women who selected the “other” write-in option were excluded from the analysis. **Long-Acting Reversible Contraception (LARC) methods** include Intrauterine Device (IUD) or contraceptive implant. **Moderately effective methods** include birth control pills, shots or injections (e.g., Depo-Provera), contraceptive patch, and vaginal ring. **Least effective methods** include condom, rhythm method/natural family planning, and withdrawal.
9. The *most-, moderately, and least-effective* method responses for the *Contraceptive Use by Effectiveness* indicator may not sum to match that of the *Any Contraceptive Use* indicator due to the exclusion of both those respondents with missing data *and* those who indicated “yes” for use of contraception but did not specify a method.
10. *Insurance*: other state-specific government plans or programs such as SCHIP/CHIP were *excluded* from estimates; those selecting “other” types were also excluded.
- **Private** includes private only, any other insurance in combination with private, TRICARE, or other military-type insurance.
 - **Medicaid** includes Medicaid or other state-named Medicaid program (e.g., TennCare).
 - **None** is defined as no selected insurance or selecting only Indian Health Service (IHS).

Appendix C: References

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